

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the claims

Claims 1-54 (cancelled)

55. (New) A polyethylene composition comprising a low-molecular-weight (LMW) ethylene homopolymer component and a high-molecular-weight (HMW) ethylene interpolymer component, wherein the LMW component is characterized as having a molecular weight distribution, MWD^L , of less than about 8.

56. (New) The polyethylene composition of claim 55, wherein the polyethylene composition is characterized as having a bimodal molecular weight distribution, and a ductile-brittle transition temperature, T_{db} , of less than -20°C .

57. (New) The polyethylene composition of claim 55, wherein the LMW component has a density of greater than 0.940 g/cm^3 .

58. (New) The polyethylene composition of claim 55, wherein the LMW component has an I_2 value ranging from about 30 to about 1000 g/10 minutes as determined in accordance with ASTM D-1238 (Condition 2.16 kg/190°C).

59. (New) The polyethylene composition of claim 55, wherein the HMW component has a density ranging from about 0.905 to about 0.955 g/cm^3 .

60. (New) The polyethylene composition of claim 55, wherein the HMW component has an $I_{21.6}$ value ranging from about 0.1 to about 15 as determined in accordance with ASTM D-1238 (Condition 21.6kg/190°C).

61. (New) The composition of claim 55, wherein the HMW is characterized by a unimodal molecular weight distribution, MWD^H of about 8 or less.

62. (New) The composition of claim 61, wherein M_w^H/M_w^L is about 1.3 or higher,

wherein M_w^H is the weight average molecular weight of the high molecular weight component and M_w^L is the weight average molecular weight of the low molecular weight component..

63. (New) The composition of claim 55, wherein MWD^L ranges from about 2 to about 5.

64. (New) The composition of claim 61, wherein MWD^H ranges from about 2 to about 5.

65. (New) The polyethylene composition of claim 55, wherein the polyethylene composition is characterized as a molecular weight distribution (MWD) as defined by the ratio of M_w/M_n of about 30 or less, and the HMW component is characterized as having a substantially uniform comonomer distribution or a reverse comonomer distribution.

66. (New) The composition of claim 65, wherein the HMW component has a reverse comonomer distribution characterized as the molar comonomer content of interpolymer fractions having a M_w greater than or equal to 300,000 g/mole being at least 25 percent higher than the molar comonomer content of interpolymer fractions having a M_w of less than or equal to 100,000 g/mole.

67. (New) The composition of claim 55, wherein the T_{db} is ranges from -25°C. to about -50°C

68. (New) The composition of claim 55, wherein the composition is characterized as having an $I_{21.6}/I_5$ ratio of less than or equal to about 30, as determined in accordance with ASTM D-1238 (Condition 21.6 kg/190°C and Condition 5 kg/190°C).

69. (New) The composition of claim 55, wherein the composition is characterized as having an $I_{21.6}$ ranging from about 3 to less than about 50 g/10 min., as determined in accordance with ASTM D-1238 (Condition 21.6 kg/190°C).

70. (New) The composition of claim 55, wherein the composition is characterized as having an I_5 ranging from about 0.05 to about 2 g/10 min., as determined in accordance with ASTM D-1238 (Condition 5 kg/190°C).

71. (New) The composition of claim 55, wherein the composition is characterized as having a M_{v1}/M_{v2} ratio of less than or equal to 0.6, where M_{v1} is the viscosity average molecular weight of the LMW high density component and M_{v2} is the viscosity average molecular weight of the HMW interpolymer component, as determined using ATREF-DV analysis.

72. (New) The composition of claim 55, wherein the composition is manufactured using a catalyst system comprising a metallocene catalyst system and/or a Ziegler-Natta catalyst system.

73. (New) The composition of claim 72, wherein the metallocene catalyst system comprises a constrained geometry catalyst.

74. (New) The composition of claim 72, wherein the catalyst system comprises an activator which has been bonded or fixed to a support prior to the addition of the metallocene catalyst.

75. (New) The composition of claim 74, wherein the activator is a boron-containing compound or an alumoxane.

76. (New) The composition of claim 66, wherein the reverse comonomer distribution is characterized by a comonomer distribution gradient in the range from about 0.0001 to about 0.1.

77. (New) The composition of claim 66, wherein the reverse comonomer distribution is characterized by a comonomer distribution gradient in the range from about 0.001 to about 0.02.

78. (New) The composition of claim 55, wherein the M_w/M_n of the composition is between about 5 and about 20.

79. (New) An article of manufacture made from the composition claim 55.

80. (New) The article of claim 79, wherein the article is a gas pipe or a water pipe.

81. (New) A method of increasing the service life of a pipe comprising using the

polyethylene composition claim 55 to form the pipe.

82. (New) A polyethylene composition comprising a low-molecular-weight (LMW) ethylene homopolymer component and a high-molecular-weight (HMW) ethylene interpolymer component, wherein the polyethylene composition is characterized as having a bimodal molecular weight distribution, the molecular weight distribution as defined by the ratio of M_w/M_n is about 30 or less, and the HMW component is characterized as having a reverse comonomer distribution.